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A new species of *Neopanorpa* (Mecoptera: Panorpidae) from Guizhou Province, China, dedicated to Dr. Wen Zhong

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Abstract: *Neopanorpa* van der Weele, 1909 is the second largest genus in the family Panorpidae (Mecoptera), following *Panorpa* Linnaeus, 1758, and is primarily distributed in the Oriental Region. China represents the center of diversity for the genus *Neopanorpa*. In this paper, a new species, *N. zhongweni* **sp. nov.**, is described from Guizhou Province. This new species is named in honor of Dr. Wen Zhong, in recognition of his outstanding contributions to the study of Mecoptera.

Keywords: Biodiversity, new species, scorpionflies, taxonomy

献给钟问博士的中国贵州新蝎蛉属（长翅目：蝎蛉科）一新种

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摘要：新蝎蛉属 *Neopanorpa* van der Weele, 1909 是蝎蛉科 Panorpidae（长翅目 Mecoptera）中仅次于蝎蛉属 *Panorpa* Linnaeus, 1758 的第二大属，大多分布于东洋区。中国是新蝎蛉属物种最为丰富的地区。本文描述了 1 个分布于贵州的新物种：钟氏新蝎蛉 *N. zhongweni* **sp. nov.**。该新种以钟问博士命名，以纪念他在长翅目昆虫研究中做出的卓越贡献。

关键词：生物多样性，新种，蝎蛉，分类学

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Introduction

Panorpidae Latreille, 1802 is the most speciose family in the order Mecoptera, with a wide distribution across Asia, North America and Europe (Penny & Byers 1979; Byers & Thornhill 1983). These insects are commonly referred to as scorpionflies due to the male terminalia being enlarged and recurved caudally, resembling a scorpion's stinger (Byers & Thornhill 1983; Dunford & Somma 2008; Byers 2009). Two subfamilies are recognized within Panorpidae: Panorpinae Latreille, 1802, with eleven genera and Neopanorpinae Wang & Hua, 2021, with four genera (Xie & Wang 2025bc).

Neopanorpa van der Weele, 1909 (Neopanorpinae) represents the second largest genus of the family, surpassed only by *Panorpa* Linnaeus, 1758 (Panorpinae), with around 170 species described to date (Wang & Hua 2019, 2022; Xie & Wang 2025ab). Species of this genus are predominantly distributed in the Oriental Region, with particularly high diversity in southern China, the Indian subcontinent, the Indochinese Peninsula, and Indonesia (Rust & Byers 1976; Chau & Byers 1978; Penny & Byers 1979; Bicha 2018). Characters distinguishing *Neopanorpa* from *Panorpa* include: the first anal vein (1A) ending proximal to the origin of radial sector (ORs); one crossvein between 1A and second anal vein (2A) in the forewing; notal organ on tergum 3 usually developed and elongated; and postnotal organ of tergum 4 rounded (Wang & Hua 2021).

Dr. Wen Zhong (钟问), a talented young entomologist in China, received his degree from Northwest A&F University in 2013 and later served as a teacher at the College of Life Science and Technology, Xinjiang University. He passed away on 6 March 2026 after a prolonged illness. During his academic career, he published several papers (Zhong & Hua 2013ab; Zhong *et al*. 2011, 2015ab), contributing to the taxonomy and behavioral biology of Mecoptera. Between 2013 and 2015, he greatly inspired the senior author's early interest in entomology and introduced him to the study of Mecoptera. Therefore, we herein describe and name a new species of the genus *Neopanorpa* in his honor, in memory of his contributions and guidance. May he rest in peace, free from all suffering, and be remembered with deep respect.

Materials and methods

All the materials examined in this study are deposited in the Biological Science Museum, Dali University (BMDU). Adult insects were caught with collecting nets and preserved in 95% ethanol or pinned. Photographs were taken with a Nikon D850 digital camera in conjunction with a Nikkor AF-S Micro 105 mm f/2.8 lens (habitus), or a Canon R5 digital camera in conjunction with a Canon MP-E 65 mm f/2.8 1-5× macro lens (the other images). The female habitus photograph in dorsal view was modified to omit the left antenna, wings and legs. All pictures were adjusted and grouped with Adobe Photoshop CC. The terminology and measurements follow Wang & Hua (2019, 2021).

The following acronyms and abbreviations are applied in the main text:

1A = First anal vein (and so forth for other anal veins)
A1 = First abdominal segment (and so forth for other segments)
AbL = Abdomen length
AtL = Antenna length
BdL = Body length
FL = Forewing length
FW = Forewing width
HL = Hindwing length
HW = Hindwing width
ORs = Origin of Rs
T1 = First tergum (and so forth for other terga)

The following abbreviations and acronyms are used in figures:

Ax = Axis
BL = Basal lobe
Ce = Cercus
DBr = Dorsal bridge of paramere
DPr = Dorsal process
DV = Dorsal valve

EL = Epandrial lobe
Ep = Epandrium
Gcx = Gonocoxite
Gs = Gonostylus
Hv = Hypovalve
LPr = Lateral process
MP = Main plate of medigynium
MPr = Median process
NO = Notal organ
PA = Posterior arm
Pm = Paramere
StH = Stalk of hypandrium
StP = Stalk of paramere
VV = Ventral valve

Taxonomy

Order Mecoptera Packard, 1886 长翅目
Superfamily Panorpoidea Latreille, 1802 蝎蛉总科
Family Panorpidae Latreille, 1802 蝎蛉科
Subfamily Neopanorpinae Wang & Hua, 2021 新蝎蛉亚科
Genus *Neopanorpa* van der Weele, 1909 新蝎蛉属

Neopanorpa zhongweni sp. nov. 钟氏新蝎蛉

https://zoobank.org/D9DD8F93-DFD6-4555-ACBA-3A126EC76226

Fig. 1

Type material. CHINA: Guizhou Province: Holotype ♂ (CN25Nzw001), Qiandongnan Prefecture: Leigong Mountain, 26°22'23" N, 108°10'48" E, 1420 m, 28.V.2025, leg. Dan-Chen Zhu; Paratypes: 2♂4♀ (CN25Nzw002–007), same data.

Etymology. The specific name is dedicated to Dr. Wen Zhong (钟问, Fig. 2). Noun in the genitive case.

Diagnosis. The new species can be differentiated from its congeners by the following characters: 1) wings with broad pterostigmal band lacking prominent apical branch; in males, 2) abdominal segments mostly black except light yellowish brown A7 and A8; 3) notal organ of T3 short and slender, extending to anterior part of T4; 4) hypovalves overlapping apically and forming subcircular window at constricted base; 5) epandrium with V-shaped emargination terminally; 6) parameres broad and lamellate; and in females, 7) axis of medigynium completely concealed.

Measurements (mm). *Male* (holotype and paratypes, n = 3): AtL 11.7–12.0, AbL 8.2–8.6, BdL 12.4–12.6, FL 12.8–12.9, FW 3.0–3.1, HL 11.5–11.8, HW 2.8–2.9; *female* (paratypes, n = 4): AtL 12.3–12.6, AbL 6.6–7.5, BdL 11.0–12.7, FL 13.0–13.8, FW 3.0–3.2, HL 12.0–12.5, HW 2.9–3.0.

Description. Male. *Head* (Fig. 1A). Vertex and occiput black. Antennae uniformly dark brown except scape dark yellowish brown, with 42–44 flagellomeres.

Thorax (Fig. 1A). Pronotum black with dense and slender setae on each side of anterior margin. Meso- and metanotum evenly black. Legs and pleura light brown with apex of tibia and distal tarsomeres blackish.

Wings (Fig. 1A). Narrow basally with rounded apex. Membrane subhyaline with dark brown markings; pterostigma dark brown; veins mostly brown with distal cross-veins whitish. Forewing apical band broad with posterior notch, extending beyond R_5; pterostigmal band with broad basal branch and lacking distal branch; basal band represented by small spot around middle of CuA. Hindwings similar to forewing with reduced markings.

Abdomen (Fig. 1D). T1–T5 black. Notal organ on T3 slender, with apex curved ventrad. A6 black and cylindrical, approximately twice as long as T5. A7–A8 light yellowish brown with dark terminal margin, slightly constricted basally; A8 beveled at apex.

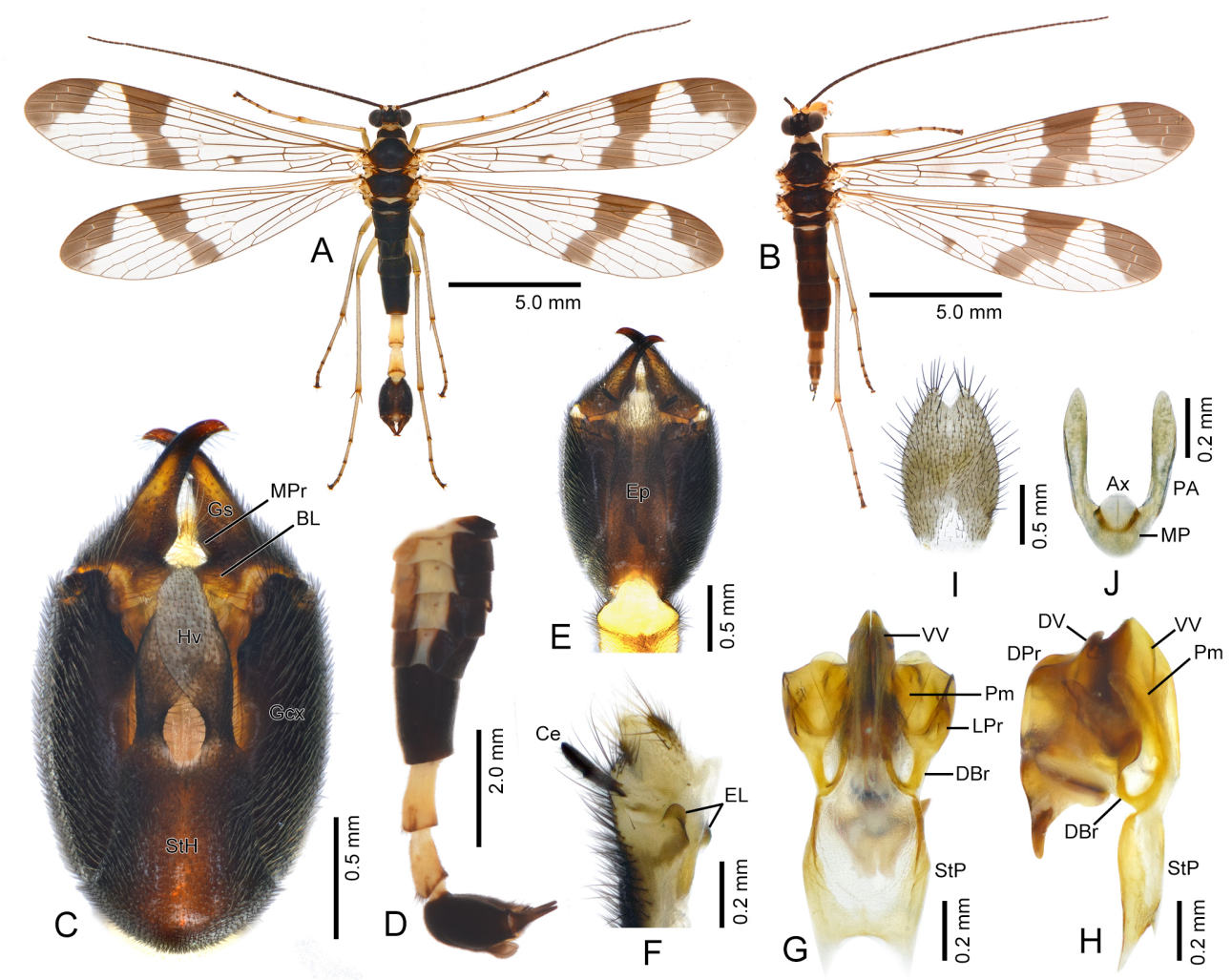

FIGURE 1. *Neopanorpa zhongweni* **sp. nov.**: **A**, **C–H** male **B**, **I & J** female **A & B** habitus, dorsal view **C** genital bulb, ventral view **D** abdomen, left-lateral view **E** genital bulb, dorsal view **F** apex of epandrium, right-lateral view **G** aedeagal complex, ventral view **H** aedeagal complex, right-lateral view **I** subgenital plate, ventral view **J** medigynium, ventral view.

Male genitalia (Figs. 1C, 1E–H). Genital bulb long elliptical and mostly black. Epandrium with broad emargination on apex, epandrial lobes developed. Hypandrium with long and broad basal stalk, split into pair of short hypovalves. Hypovalves black basally and whitish in distal half, greatly constricted basally, overlapping apically and forming subcircular window basally. Gonocoxites approximately twice as long as gonostyli; gonostyli with median process slightly raised, and basal lobe stout and greatly enlarged. Parameres broad and lamellate, greatly divergent at base; dorsal bridge short and broad, connected with paramere in U-shape basally; stalks of parameres fused basally. Ventral valves greatly sclerotized and acutely projected apically; dorsal valves short; dorsal processes broad; lateral processes broad.

Description. Female. Similar to males in general appearance, except for denser coloration (Fig. 1B).

Female genitalia (Figs 1I & J). Subgenital plate oval with deep V-shaped emargination terminally. Medigynium with main plate undeveloped; axis stout without conspicuous apodemes; posterior arms slender and parallel, slightly spatulate in distal half.

Distribution. CHINA: Guizhou Province.

Notes. Based on morphological similarities, *N. zhongweni* **sp. nov.** can be assigned to the *N. cavaleriei* group *sensu* Wang & Hua (2021), characterized by the following characters: in males, 1) T4 lacking a membranous region below notal organ (Fig. 1A); 2) hypovalves overlapping apically, forming subcircular window basally (Fig. 1C); 3) paramere greatly developed and lamellate (Fig. 1G); and in females, 4) the undeveloped main plate and concealed axis of medigynium (Fig. 1J). Within the group, this species resembles *N. spatulata* Byers, 1965 in the wing markings, but can be readily differentiated from the latter by the evenly dark nota (*vs*. unevenly), the much narrower male hypovalves (*vs*. broad), and the greatly expanded apex of parameres (*vs*. narrower).

FIGURE 2. Dr. Wen Zhong conducting fieldwork at Huoditang Forest Farm, Shaanxi, China on 5 August 2009. Photograph © Qiong-Hua Gao.

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Data availability: All of the data that support the findings of this study are available in the main text.

Ethical statement: No ethical statement was reported.

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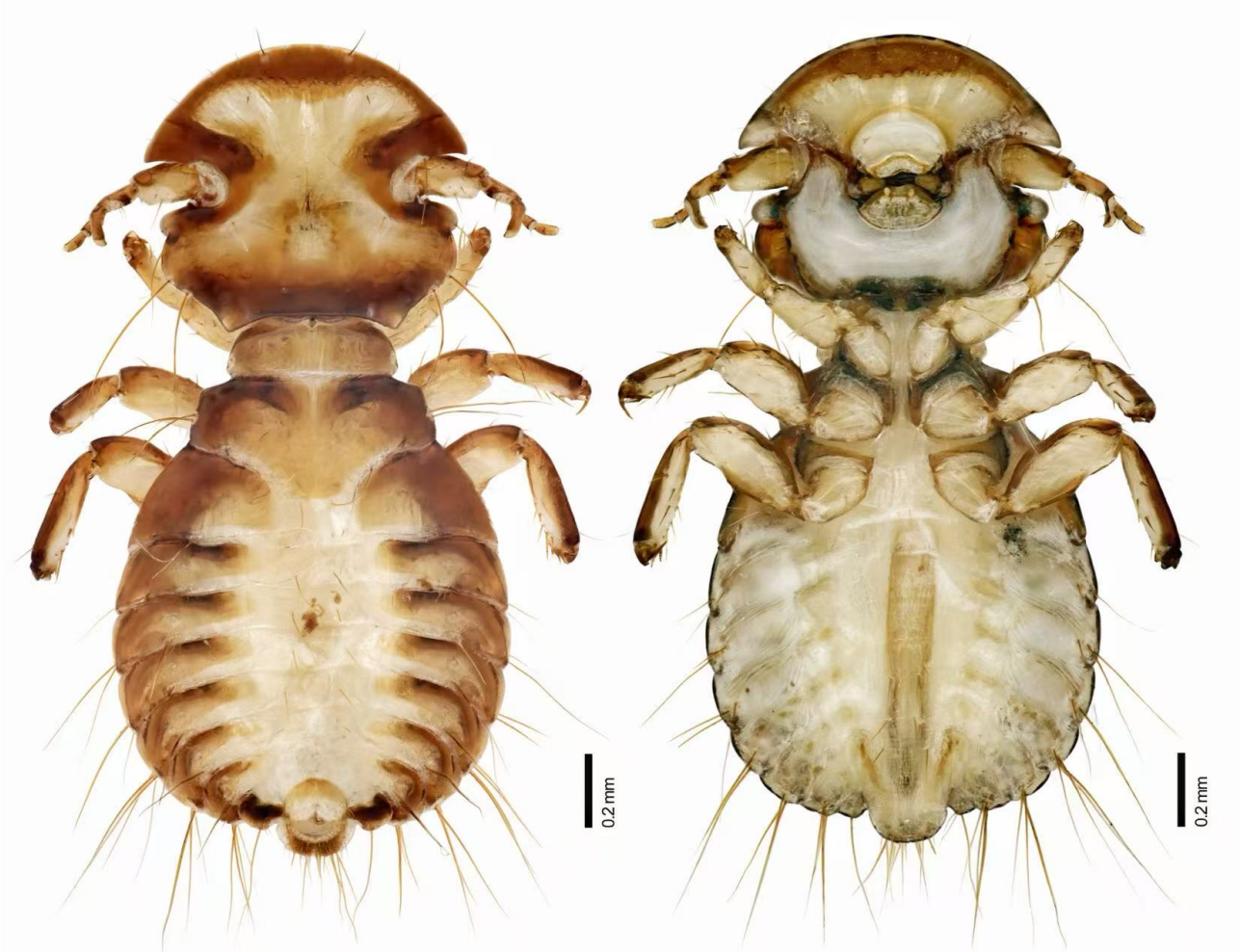
Photo Gallery



鸡角羽虱 *Goniodes dissimilis* Denny, 1842
Mianyang, Sichuan
Photograph by Ji-Shen WANG [王吉申]